Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-15047-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 01.07.2020

Date of issue: 01.07.2020

Holder of certificate:

GIGAHERTZ Optik Vertriebsgesellschaft für technische Optik mbH
An der Kälberweide 12. 82299 Türkenfeld

Calibration in the fields:

High Frequency and Radiation Quantities
Optical Quantities
- **Radiometry**

Abbreviations used: see last page

The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
https://www.dakks.de/en/content/accredited-bodies-dakks

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement [1]	Remarks
Spectral responsivity photo diodes	1 µA/W to 1 A/W	250 nm to 300 nm	3.0 %	terminal voltage at photo diode ≤ 50 µV 1 nW ≤ Φ ≤ 10 µW 18 °C ≤ t ≤ 28 °C 1 nm ≤ $\Delta\lambda$ ≤ 11 nm
		> 300 nm to 320 nm	2.9 %	100 nW ≤ Φ ≤ 100 µW 18 °C ≤ t ≤ 28 °C 1 nm ≤ $\Delta\lambda$ ≤ 11 nm Φ = radiative power on active area t = ambient temperature of calibration item $\Delta\lambda$ = full width at half maxmimum
		> 320 nm to 340 nm	2.6 %	
		> 340 nm to 360 nm	2.3 %	
		> 360 nm to 400 nm	2.0 %	
		> 400 nm to 880 nm	1.7 %	
		> 880 nm to 920 nm	2.0 %	
		> 920 nm to 960 nm	2.4 %	
		> 960 nm to 1040 nm	3.0 %	
		> 1040 nm to 1160 nm	4.0 %	
Spectral irradiance lamps	10 µW/(m²nm) to 0.30 W/(m²nm)	250 nm to 260 nm	6.3 %	200 W ≤ P ≤ 2000 W P = electrical power at lamp
		> 260 nm to 270 nm	5.2 %	
		> 270 nm to 280 nm	4.1 %	
		> 280 nm to 300 nm	3.7 %	
		> 300 nm to 390 nm	3.1 %	
		> 390 nm to 780 nm	2.8 %	
		> 780 nm to 1040 nm	3.3 %	
		> 1040 nm to 1550 nm	3.8 %	
		> 1550 nm to 1950 nm	4.3 %	
		> 1950 nm to 2000 nm	4.7 %	
		> 2000 nm to 2050 nm	5.1 %	
		> 2050 nm to 2100 nm	5.5 %	
		> 2100 nm to 2150 nm	5.9 %	
		> 2150 nm to 2200 nm	6.3 %	
		> 2200 nm to 2250 nm	6.7 %	
		> 2250 nm to 2300 nm	7.1 %	
		> 2300 nm to 2350 nm	7.5 %	
		> 2350 nm to 2400 nm	7.9 %	
		> 2400 nm to 2450 nm	8.5 %	
		> 2450 nm to 2500 nm	10 %	

Abbreviations used:

CMC	Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)
DIN	Deutsches Institut für Normung e.V.

[1] The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of k = 2 unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.